(FILE 'HOME' ENTERED AT 15:11:50 ON 20 JUL 2000)

```
       FILE 'USPATFULL' ENTERED AT 15:12:00 ON 20 JUL 2000
L1         6696 S (713/?)/NCL
L2         8531 S (709/?)/NCL
L3          829 S "TCP/IP" PROTOCOL
L4        36036 S REMOT? CONTROL?
L5            2 S ADVERTIS? PUBLISHER
L6            3 S AD PUBLISHER#
L7            5 S L5 OR L6
L8        14582 S L1 OR L2
L9            2 S L3 (P) L4
L10          36 S L3 AND L4 AND L8
L11          25 S L10 AND HOST
L12          22 S L11 AND CLIENT#
L13          14 S L12 AND ADVERTIS?
L14          14 S L13 AND (AVAILABILITY OR CAPACITY)
L15           0 S L14 AND JAVA
L16           0 S L14 AND HTML
L17         131 S ESTABLISH? (P)CONNECT? (P) CLIENT# (P) HOST
L18         195 S URL ADDRESS?
L19           1 S L17 AND L18 AND JAVA AND HTML
L20           3 S L10 AND JAVA
L21           6 S L10 AND HTML
L22           7 S L20 OR L21
L23           2 S L22 AND HOST
L24           2 S L23 AND CLIENT#
L25          22 S L10 AND HOST AND CLIENT#
L26           2 S L25 AND URL
L27           1 S L25 AND L17
L28       53742 S AD OR ADVERTIS?
L29       17055 S AD PUBLISHER# OR ADVERTIS?
L30          14 S L25 AND L29
L31           0 S L30 AND JAVA
L32           0 S L30 AND HTML
L33           2 S L25 AND HTML
L34           1 S L25 AND JAVA
L35           2 S L33 OR L34
L36           6 S L10 AND HTML
L37           3 S L10 AND JAVA
L38           7 S L36 OR L37
L39           5 S L38 NOT L35
L40          14 S L25 AND L29
L41          14 S L40 NOT L39
L42          19 S L3 AND L4 AND L29 AND HOST AND CLIENT#
L43           5 S L42 NOT L41

=> D 1-5
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L43  ANSWER 1 OF 5  USPATFULL
AN     1999:154138  USPATFULL
TI     Internet-based system for enabling information-related transactions
over
       the internet using Java-enabled internet terminals provided with bar
       code symbol readers for reading Java-Applet encoded bar code symbols
IN     Wilz, Sr., David M., Sewell, NJ, United States
       Knowles, Carl H., Moorestown, NJ, United States
PA     Metrologic Instruments, Inc., Blackwood, NJ, United States (U.S.
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         corporation)
PI       US 5992752  19       130
AI       US 1997-869164       9970604 (8)
RLI      Continuation-in-part of Ser. No. US 1997-846219, filed on 25 Apr 1997
         Ser. No. Ser. No. US 1996-645331, filed on 13 May 1996, now patented,
         Pat. No. US 5844227 Ser. No. Ser. No. US 1996-615054, filed on 12 Mar
         1996 Ser. No. Ser. No. US 1995-573949, filed on 18 Dec 1995, now
         abandoned Ser. No. Ser. No. US 1994-292237, filed on 17 Aug 1994, now
         patented, Pat. No. US 5808285 Ser. No. Ser. No. US 1994-365193, filed
on
         28 Dec 1994, now patented, Pat. No. US 5557093 Ser. No. Ser. No. US
         1994-293493, filed on 19 Aug 1994, now patented, Pat. No. US 5525789
         Ser. No. Ser. No. US 1995-561479, filed on 20 Nov 1995, now patented,
         Pat. No. US 5661292 Ser. No. Ser. No. US 1993-278109, filed on 24 Nov
         1993, now patented, Pat. No. US 5484992 Ser. No. Ser. No. US
         1995-489305, filed on 9 Jun 1995, now abandoned Ser. No. Ser. No. US
         1995-476069, filed on 7 Jun 1995, now patented, Pat. No. US 5591953
Ser.
         No. Ser. No. US 1996-584135, filed on 11 Jan 1996, now patented, Pat.
         No. US 5616908 And Ser. No. US 1997-838501, filed on 7 Apr 1997, now
         patented, Pat. No. US 5869819 which is a continuation-in-part of Ser.
         No. US 1997-820540, filed on 19 Mar 1997 which is a
continuation-in-part
         of Ser. No. US 1996-753367, filed on 25 Nov 1996
DT       Utility
LN.CNT   2021
INCL     INCLM: 235/472.010
         INCLS: 235/462.010; 235/462.250
NCL      NCLM:  235/472.010
         NCLS:  235/462.010; 235/462.250
IC       [6]
         ICM: G06K007-10
EXF      235/462; 235/454; 235/463; 235/467; 235/469; 235/375; 235/470;
         235/462.01; 235/462.25; 235/462.24; 235/472


L43      ANSWER 2 OF 5   USPATFULL
AN       1998:129335  USPATFULL
TI       Distributed connection-oriented services for switched communications
         networks
IN       Dobbins, Kurt, Bedford, NH, United States
         Grant, Thomas A., Derry, NH, United States
         Ruffen, David J., Salem, NH, United States
         Kane, Laura, Merrimack, NH, United States
         Len, Theodore, Amherst, NH, United States
         Andlauer, Philip, Londonderry, NH, United States
         Bahi, David H., Manchester, NH, United States
         Yohe, Kevin, Amherst, NH, United States
         Fee, Brendan, Nashua, NH, United States
         Oliver, Chris, Rochester, NH, United States
         Cullerot, David L., Manchester, NH, United States
         Skubisz, Michael, Durham, NH, United States
PA       Cabletron Systems, Inc., Rochester, NH, United States (U.S.
corporation)
PI       US 5825772  19981020
AI       US 1996-626596  19960402 (8)
RLI      Continuation-in-part of Ser. No. US 1995-559738, filed on 15 Nov 1995,
         now patented, Pat. No. US 5684800
DT       Utility
LN.CNT   1686
INCL     INCLM: 370/396.000
         INCLS: 370/401.000; 370/410.000
NCL      NCLM:  370/396.000
         NCLS:  370/401.000; 370/410.000
IC       [6]
         ICM: H04L012-56
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            ICS: H04L012-44
EXF     370/216; 370/2⬤  370/238; 370/256; 370/395; 37⬤96; 370/400; 370/401;
        370/402; 370/40⬤ 370/408; 370/351; 370/410
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L43     ANSWER 3 OF 5  USPATFULL
AN      1998:86949  USPATFULL
TI      Method and apparatus for multiprotocol operation of a networked
        peripheral
IN      Kalwitz, George A., Costa Mesa, CA, United States
        Russell, William C., Laguna Hills, CA, United States
        Barrett, Lorraine F., Yorba Linda, CA, United States
        Wadsworth, Robert D., Costa Mesa, CA, United States
        Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
PA      Canon Kabushiki Kaisha, Tokyo, Japan (non-U.S. corporation)
PI      US 5784622  19980721
AI      US 1992-978380  19921118 (7)
DT      Utility
LN.CNT 3341
INCL    INCLM: 395/726.000
NCL     NCLM:  710/200.000
IC      [6]
        ICM: G06F013-14
EXF     395/200; 395/726; 364/240.8
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L43     ANSWER 4 OF 5  USPATFULL
AN      97:21407  USPATFULL
TI      Method and apparatus for interfacing a peripheral to a local area
        network
IN      Russell, William C., Laguna Hills, CA, United States
        Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
        Wadsworth, Robert D., Costa Mesa, CA, United States
        Barrett, Lorraine F., Yorba Linda, CA, United States
        Kalwitz, George A., Costa Mesa, CA, United States
        Ip, Tony K., Lake Forest, CA, United States
        Kuver, Walter D., Laguna Hills, CA, United States
PA      Canon Kabushiki Kaisha, Tokyo, Japan (non-U.S. corporation)
PI      US 5611046  19970311
AI      US 1992-978369  19921118 (7)
DT      Utility
LN.CNT 3419
INCL    INCLM: 395/200.100
        INCLS: 395/828.000; 364/DIG.001
NCL     NCLM:  358/001.160
        NCLS:  710/008.000; 710/015.000; 710/019.000
IC      [6]
        ICM: G06F013-00
EXF     395/200; 395/325; 395/275; 395/828
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L43     ANSWER 5 OF 5  USPATFULL
AN      94:53992  USPATFULL
TI      Method and apparatus for obtaining and for controlling the status of a
        networked peripheral
IN      Barrett, Lorraine F., Yorba Linda, CA, United States
        Russell, William C., Laguna Hills, CA, United States
        Kraslavsky, Andrew J., Rancho Santa Margarita, CA, United States
        Wadsworth, Robert D., Costa Mesa, CA, United States
PA      Canon Information Systems, Inc., Costa Mesa, CA, United States (U.S.
        corporation)
PI      US 5323393  19940621
AI      US 1992-978281  19921118 (7)
DT      Utility
LN.CNT 3253
INCL    INCLM: 370/085.800
        INCLS: 340/825.220
NCL     NCLM:  370/449.000
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      NCLS:  340/825.220
IC    [5]
      ICM: H04Q005-14
EXF   340/825.06; 340/825.08; 340/825.22; 178/23R; 364/131; 364/519;
370/85.1;
      370/85.8
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5,838,682

Method and apparatus for establishing communications with a remote node on a switched network based on hypertext dialing information received from a packet network

Inventor(s): Dekelbaum, George J., Basking Ridge, NJ, United States
              Fischer, Philip J., Bedminster, NJ, United States
              Judice, Charles N., Rochester, NY, United States
              Backus, Richard G., Manassas, VA, United States
              Flaherty, Stephen J., Upper Marlboro, MD, United States
Assignee: Bell Atlantic Network Services, Inc., Arlington, VA, United
              States (U.S. corporation)
Appl. No.:   95-563243
Filed: 28 Nov 1995

Int. Cl. H04L012-66
Issue U.S. Cl. 370/401.000
Current U.S. Cl. 370/401.000; 379/090.010; 379/093.070; 379/093.120;
                       379/093.140; 379/093.170
Field of Search 370/351; 370/352; 370/355; 370/356; 370/401; 370/408;
                       370/522; 370/524; 370/389; 370/392; 370/264; 379/354;
                       379/355

Reference Cited

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Patent Number	Date	Class	Inventor
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US 5559862	Sep 1996	379/355.000	Bhagat et al.

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Jon Postel, Internet Official Protocol Standards, November 1994, Entire

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L19   ANSWER 1 OF 1   USPATFULL
AN        1998:145065   USPATFULL
TI        Method and apparatus for establishing communications with a remote node
          on a switched network based on hypertext dialing information received
          from a packet network
IN        Dekelbaum, George J., Basking Ridge, NJ, United States
          Fischer, Philip J., Bedminster, NJ, United States
          Judice, Charles N., Rochester, NY, United States
          Backus, Richard G., Manassas, VA, United States
          Flaherty, Stephen J., Upper Marlboro, MD, United States
PA        Bell Atlantic Network Services, Inc., Arlington, VA, United States
(U.S.
          corporation)
PI        US 5838682   19981117
AI        US 1995-563243   19951128 (8)
DT        Utility
LN.CNT 1208
INCL      INCLM: 370/401.000
NCL       NCLM:  370/401.000
          NCLS:  379/090.010; 379/093.070; 379/093.120; 379/093.140; 379/093.170
IC        [6]
          ICM: H04L012-66
EXF       370/351; 370/352; 370/355; 370/356; 370/401; 370/408; 370/522; 370/524;
          370/389; 370/392; 370/264; 379/354; 379/355


=> d kwic


L19   ANSWER 1 OF 1   USPATFULL
SUMM      .  .  .   type Internet sites (e.g., FTP [file transfer protocol] and
          Gopher sites) without having to know the lengthy uniform resource
          locators (URL) addresses of the sites to be
          accessed. (The current Internet standard for URLs is given in the
          Network Working Group RFC.   .   .  or graphics (together known as
          "hyperlinks") to retrieve associated information. The browser
interprets
          the hypertext formatted as hypertext markup language (HTML)
          and transmitted using hypertext transfer protocol (HTTP.) If the
          hypertext points to an information source outside of the current
          hypertext.   .   .  page, it initiates a service request to the URL
          associated with the selected hypertext. Thus, each page of information
          in HTML format includes not only text and graphics, but the
          embedded addresses of sites having related information.
SUMM      .   .   .   object is a Home Page. A Home Page is simply a document that
          has been composed or "markedup" using the HTML.
SUMM      .   .   .   the layout attributes. Examples of common markup languages
          include Postscript and the various proprietary markup languages used by
          word processors. HTML is not as encompassing as these
          examples. For example, while HTML can specify that a given
          piece of a" document is a header and/or that is should be rendered
          emphasized, the.   .   .   In contrast, Postscript can be used to specify
          very specific attributes such as 18 point courier bold left justified.
          The HTML standard used by the Internet is described in "A
          Beginner's Guide to HTML" available on the Internet. Further
          information about HTML can also be found at
          "http://www.gov.nb.ca/hotlist/htmldocs.htm".
SUMM      A Web Browser such as Mosaic or Netscape is a client application that
```

can interpret **HTML** and communicate using the HTTP protocol. A
browser may or ⬤ y not know what to do with a r ⬤ irce that.   .   .
SUMM   .   .   . and pa⬤es it to the OS TCP stack which⬤ncludes code to
handle
the data. The OS then initiates a **connection** with the server's
host system. Once the OS and the **host** system
establish communication, the OS ships the request to the
host. This request is passed through the various protocol layers
to the HTTP daemon or server. The server interprets the request, checks
its MIME type, and sends the **client** the resource and
information about the resource's MIME type. When the OS receives the
resource it passes it back to the browser which examines the response.
If the returned object is an **HTML** document, the browser
displays the document on the computer display screen. If the object is
a
MIME type that the.   .   . passing it the resource for processing. In
the meantime, once the request has been satisfied, either the server or
the **client** breaks the **connection** thus freeing up the
browser for another request.
SUMM   .   .   . analog POTS or ISDN service. The first communications
interface
may include a Web Browser functionality for processing hypertext markup
language (**HTML**) messages received from the Internet while the
second communications interface may take the form of voice transmission
and reception apparatus.   .   .
SUMM   .   .   . feature of the invention, the terminal includes the capability
to supply information to the remote nodes identifying one of the
HTML messages received from the internetwork so as to allow the
remote node to associate and coordinate the communications conducted
on.
                .   .
SUMM   According to another aspect of the invention, the first communications ·
interface includes a first terminal application program system
retrieving **HTML** messages from the selected remote site wherein
the **HTML** messages have embedded therein (a) the address data,
and (b) type information corresponding to the address data. The
terminal
application program also includes a display processor for displaying
the
HTML messages on the output device, e.g., video terminal, and
for providing the address data in response to the input device,.   .   .

DRWD   FIG. 6 is a graphical representation of a sample Web page including a
HTML hot link to initiate a telephone call to a merchant.
DRWD   FIG. 7 is a graphical representation of a client terminal running the
Netscape browser displaying (i) a partial page of **HTML** format
hypertext and (ii) a control panel for initiating a telephone call to a
merchant.
DETD   .   .   . Internet Server 102 which responds by sending the client the
specified resource. The resource in this case may be an **HTML**
document as shown in FIG. 6. At the bottom of the page, enclosed in
triangular brackets ("<>") in the figure,.   .   .
DETD   .   .   . Microsoft Windows. Alteratively, the autodialer functionality
may be included as an applet embedded within a merchant's web page.
Thus, the **HTML** object supplied by Internet Server 102
incorporates not only the telephone number to be dialed, but the
executable content required.   .   . 100 but, in response to
establishment of the connection, automatically request and/or identify
the session ID from/to ACD 106. The **JAVA** language may be used
for such an applet with Web Browser 14 being **JAVA** or HotJAVA
compatible.
DETD   .   .   . a session history, and to issue a session identification
number
("session ID") to a client upon the client requesting a **HTML**
page including autodialing hyperlinks. The sales representative
solicits

the session ID from each caller upon initial contact and uses it.   .   .
           .   .   . addre●ven in the absence of an outs●ding request from the
           client to the s●ver. The server then can downl●● **HTML** data
           to the browser under local control (i.e., server "push" of the data)
           rather than merely responsive to a.   .   .

What is claimed is:
      .   .   . network comprises an internetwork of data networks and said first
           communications interface comprises a Web Browser processing hypertext
           markup language (**HTML**) messages received from the
           internetwork.

      .   .   . device of claim 5 further comprising session identification means
for
           supplying information to said remote node identifying one of the
      HTML messages received from the internetwork.

      .   .   . 1, wherein said first communications interface comprises a first
           terminal application including: hypertext processing means for
           retrieving hypertext markup language (**HTML**) messages from the
           selected remote site, said **HTML** messages having embedded
           therein (a) said address data, and (b) type information corresponding
to
           said address data; display processing means for displaying the
      HTML messages on said output device and for providing said
           address data in response to said input device designating said address.
           .   .
      .   .   . network comprises an internetwork of data networks and said first
           communications interface comprises a Web Browser processing hypertext
           markup language (**HTML**) messages received from the
           internetwork.

      .   .   . device of claim 25 further comprising session identification means
           for supplying information to said remote node identifying one of the
      HTML messages received from the internetwork.

      .   .   . 22, wherein said first communications interface comprises a first
           terminal application including: hypertext processing means for
           retrieving hypertext markup language (**HTML**) messages from the
           selected remote site, said **HTML** messages having embedded
           therein (a) said address data, and (b) type information corresponding
to
           said address data; display processing means for displaying the
      HTML messages on said output device and for providing said
           address data in response to said input device designating said address.
           .   .
      .   .   . communications network comprises an internetwork of data networks
and
           said pages of information comprise data formatted in hypertext markup
           language (**HTML**).

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46 Claim(s), 19 Drawing Figure(s), 15 Drawing Page(s)

ABSTRACT

An Internet type access system includes an autodialer for automatically
establishing communications with a merchant's facility over a switch network
while maintaining Internet connectivity over a packet data network. The
autodialer, in combination with the merchant's server, coordinates between the
Internet session and the newly established switched connectivity, the session
history from the prior Internet session being supplied to a sales
representative receiving the autodialed call. The sales representative is
provided with a terminal for controlling the merchant's server to push data to
the client in response to the interactive session simultaneously conducted
over
the switched network.

Patent Number: 6088730
Date of Patent: 11 Jul 2000

Methods and apparatus for downloading data between an information processing
device and an external device via a wireless communications technique

Inventor(s): Kato, Naotaka, Fujisawa, Japan
              Kanada, Yoshihisa, Yokohama, Japan
Assignee: International Business Machines Corporation, Armonk, NY, United
              States (U.S. corporation)
Appl. No.:   98-5962
Filed: 12 Jan 1998

                        Priority Data

JP 1997-143596   2 Jun 1997

Int. Cl. G06F013-00
Issue U.S. Cl. 709/227.000; 709/217.000; 709/232.000; 709/250.000;
                       455/556.000
Current U.S. Cl. **709/227.000; 709/217.000;**
                       709/232.000; 709/250.000; 455/556.000
Field of Search 709/201; 709/202; 709/203; 709/217; 709/219; 709/218;
                       709/227; 709/230; 709/232; 709/250; 709/300; 709/302;
                       707/10; 707/104; 455/422; 455/433; 455/435; 455/73;
                       455/556; 455/557

                        Reference Cited

                        PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
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US 5440559	Aug 1995	370/314.000	Gaskill
US 5564070	Oct 1996	455/507.000	Want et al.
US 5781723	Jul 1998	713/200.000	Yee et al.
US 5845282	Dec 1998	707/010.000	Alley et al.
US 5862321	Jan 1999	395/200.300	Lamming et al.

Art Unit - 278
Primary Examiner - Vu, Viet D.
Attorney, Agent or Firm - Ryan & Mason, L.L.P.; Otterstedt, Paul J.

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17 Claim(s), 6 Drawing Figure(s), 5 Drawing Page(s)

ABSTRACT
To provide an improved information processing apparatus and a method for
controlling the same, which enables to smoothly transfer data, such as
processed results obtained from execution of an application program, an
HTML   file acquired from a Web server in accordance with the TCP
/IP protocol or the like, to an external device (PDA) by
using an infrared communication function. The disclosed information processing

apparatus periodically accesses a predetermined server machine (e.g., a Web server) to acquire a d●red file (e.g., an **HTML** file) ●is file acquisition operation is carried out without the involvement of operations of an infrared transceiver. In other words, the information processing apparatus attempts to continually perform caching of the most recent download data. As a result, when the PDA as an external device is set into an infrared communication mode and a user simply holds the PDA to a station discoverable region of the information processing apparatus, a connection between them is established, thereby enabling the PDA to receive the most recent data.

L24   ANSWER 2 OF 2   USPATFULL
United States Patent   Patent Number: 5905248
                                             Date of Patent: 18 May 1999

System and method for carrying out information-related transactions using web documents embodying transaction enabling applets automatically launched and executed in response to reading URL-encoded symbols pointing thereto

Inventor(s):   Russell, Garrett, Newark, DE, United States
               Wilz, Sr., David M., Sewell, NJ, United States
               Knowles, Carl Harry, Morristown, NJ, United States
Assignee: Metrologic Instruments, Inc., Blackwood, NJ, United States (U.S. corporation)
Appl. No.:   97-916694
Filed: 22 Aug 1997

                   Related U.S. Application Data

Continuation-in-part of Ser. No. US 1997-905903, filed on 4 Aug 1997
 Ser. No. Ser. No. US 1997-869164, filed on 4 Jun 1997
 Ser. No. Ser. No. US 1997-846219, filed on 25 Apr 1997
 Ser. No. Ser. No. US 1997-838501, filed on 7 Apr 1997
 Ser. No. Ser. No. US 1996-645331, filed on 24 Sep 1996
 Ser. No. Ser. No. US 1996-615054, filed on 12 Mar 1996
 Ser. No. Ser. No. US 1995-573949, filed on 18 Dec 1995
 Ser. No. Ser. No. US 1994-292237, filed on 17 Aug 1994, now patented, Pat. No.
US 5767499, Pat. No. 5767499
 Ser. No. Ser. No. US 1994-365193, filed on 28 Dec 1994, now patented, Pat. No.
US 5557093, Pat. No. 5557093
 Ser. No. Ser. No. US 1994-293493, filed on 19 Aug 1994, now patented, Pat. No.
US 5525789, Pat. No. 5525789
 Ser. No. Ser. No. US 1995-561479, filed on 20 Nov 1995, now patented, Pat. No.
US 5661292, Pat. No. 5661292
 Ser. No. Ser. No. US 1993-278109, filed on 24 Nov 1993, now patented, Pat. No.
US 5484992, Pat. No. 5484992
 Ser. No. Ser. No. US 1995-489305, filed on 9 Jun 1995, now abandoned
 Ser. No. Ser. No. US 1995-476069, filed on 7 Jun 1995, now patented, Pat. No.
US 5591953, Pat. No. 5591953
 And Ser. No. US 1996-584135, filed on 11 Jan 1996, now patented, Pat. No. US
5616908, Pat. No. 5616908
 which is a continuation of Ser. No. US 1996-651951, filed on 21 May 1996
 which is a continuation of Ser. No. US 1995-489305, filed on 9 Jun 1995, now
abandoned
 which is a continuation of Ser. No. US 1992-821917, filed on 16 Jan 1992, now
abandoned
 which is a continuation-in-part of Ser. No. US 1990-583421, filed on 17 Sep
1990, now patented, Pat. No. US 5260553, Pat. No. 5260553
 And Ser. No. US 1990-580740, filed on 11 Sep 1990, now abandoned

, said Ser. No. US 838501
which is a continuation-in-part of Ser. No. US 1997-8●●0, filed on 19 Mar
1997
which is a continuation-in-part of Ser. No. US 1996-753367, filed on 25 Nov
1996

Int. Cl. G06K007-10
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235/472; 235/475; 235/470; 235/469

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22 Claim(s), 19 Drawing Figure(s), 12 Drawing Page(s)

ABSTRACT

A novel transaction-enabling method and system are disclosed, wherein a
transaction-enabling **Java**-Applet is embedded within an **HTML**
-encoded document stored in an HTTP server at predetermined URL. When a code
symbol (e.g., magstripe or bar code) encoded with the URL is read using a code
symbol reader interfaced with a **Java**-enabled Internet terminal, the
corresponding HTTP document is automatically accessed and displayed at the
terminal, and the transaction-enabling **Java**-Applet initiated for
execution so that the customer, consumer or **client** desiring the
transaction can simply and conveniently conduct the information-related
transaction over the Internet. The transaction-enabling Internet terminal can
be in the form of an Internet kiosk installed in a public location, in the
manner as conventional ATMs. By virtue of the present invention, universal
transaction machine (UTMs) can be easily deployed for use by the mass
population so that they can easily conduct various types of transaction over
the Internet.

Computer resource distributing method and system for distributing a
multiplicity of processes to a plurality of computers connected in a network

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Field of Search 395/650; 395/700

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27 Claim(s), 43 Drawing Figure(s), 32 Drawing Page(s)

ABSTRACT

When amounts of processing of processes to be distributed are known, a
scheduler in a **client** allots the processes in order of their
respective amounts of processing to computers in ascending order respective of
cumulative amounts of processing of the computer. The cumulative amount of
processing in each computer is updated by adding the amount of processing of
the allotted process to the cumulative amount of processing of the computer
each time a process is allotted to a computer. Each computer supplies
situation
data such as usage, together with reliability thereof to a server which
distributes computers, and the server allots usable computers to the
client   on the basis of these data. The agent of each usable computer
supplies a resource use token to the **client** so as to permit exclusive
use of a computer resource.

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AB   When amounts of processing of processes to be distributed are known, a
        scheduler in a **client** allots the processes in order of their
        respective amounts of processing to computers in ascending order
        respective of cumulative amounts. . . as usage, together with
        reliability thereof to a server which distributes computers, and the
        server allots usable computers to the **client** on the basis of
        these data. The agent of each usable computer supplies a resource use
        token to the **client** so as to permit exclusive use of a
        computer resource.
SUMM   . . . necessary to take the following facts into consideration: (1)
        that the situations of the CPUs, including a breakdown of a **host**
        , dynamically change; (2) that a wide variety of computers are
connected
        to each other; and (3) that there may be. . .
SUMM   . . . of the situation data and the reliability data, the server
        distributes processes to computers or allots usable computers to a
     client which distributes processes. In this case, each computer
        increases the reliability when the change of the situation is small,
        and. . .
SUMM   . . . and the hardware information of each computer, the server
        distributes processes to computers resources or allots preselected
        computers to the **client**. In this way, distribution
        corresponding to the performance of each computer is enabled, thereby
        increasing the throughput of the computer. . .
SUMM   . . . the exclusive use of a computer resource is provided in a
        computer. The agent establishes a connection with a predetermined
     client which requests the use of a computer resource, and
        supplies a computer resource use token to the **client** for the
        purpose of the exclusive allotment of the computer resource to the
     client. In this way, by allotting a resource by using the
        resource use token, it is possible to allot a plurality of resources
        serially and efficiently without a fear of the same resource being
        allotted to different **clients**.
SUMM   . . . the agent compares the situation of a computer resource when
        the agent has received a processing asking message from a **client**
        with the situation of the computer resource when the agent supplies a
        token, and if there is a change in. . . this way, it is possible to
        efficiently allot a plurality of computer resources whose situation
        change to a plurality of **clients**.
SUMM   Furthermore, in a computer resource distributing method according to
the
        present invention, when a **client** detects a breaking of the

connection, distribution is carried out except for the computer
resource
with which the connection has.　.　.

DRWD　FIG. 16 is an explanatory view of a distribution processing **host**
table;

DRWD　FIG. 19 is an explanatory view of a **host**.process mapping
table;

DRWD　FIG. 30 shows the processing flow of a **host** situation data
controller;

DRWD　FIG. 32 shows the structure of a **client**;

DRWD　FIG. 36 is an explanatory view of the resource use information for each
client; and

DETD　In FIG. 2, the reference numerals 31 to 36 represent a plurality of
computers (**host** A to **host** F) which are connected in
a network; 31a to 36a represent local resource managers (LMs) provided
in the respective computers so as to monitor the operational states
thereof; 31b to 32b represent **clients** (CLTs), each of which
requests computers usable for process distribution and executes
distribution of processes by using the allotted computers;.　.　.　DM"
hereinafter) which holds the data on the operational state of each
computer and determines the usable computers when a **client** CLT
requests computer resources; and 31d to 36d each represent a resource
use permitting mechanism (referred to as "agent or AGT" hereinafter)
for
supplying a message (token) which permits the exclusive use of a
computer resource to the **client** CLT which is designated by the
domain resource manager DM.

DETD　The computers which are usable for the distribution of processes by a
client is determined as follows. (See FIG. 2(a).) The local
resource managers LMs 31a to 36s of the respective computers transmit.
.　.　DM 32c receives a request for the allotment of computers which
are
usable for the distribution of processes from the **client** 31b
(which corresponds to the scheduler 13 in FIG. 1), the domain resource
manager DM 32c determines at least two.　.　the reliability of each
computer taken into consideration. For example, computers are selected
in order of capacity and reliability. The **client** 31b
distributes the processes to the usable computers in the manner
explained in FIG. 1. In this case, each of.　.　.

DETD　.　.　.　the domain resource manager DM 32c, and the domain resource
manager DM 32c allots at least two computers to the **client** 31b
on the basis of the situation data, the reliability and the hardware of
each computer. In this way, it.　.　.

DETD　In order that the **client** 31b can actually ask the usable
computers 33 to 36 to execute the processes, it is necessary to obtain
permission.　.　.

DETD　.　.　.　manager DM 32c determines the usable computers 33 to 36 in
answer to the request for computer resources from the **client**
31b, the domain resource manager DM 32c instructs the agents 33d to 36d
of the respective computers to answer the request for the execution of
the processes from the **client** 31b (FIG. 2(a)). Under the
instructions of the DM 32c each of the agents 33d to 36d establishes a
connection with the **client** 31b which requests the use of
computer resources (FIG. 2(b)), and supplies a resource use token to
the
client 31b for the purpose of the exclusive allotment of the
computer resource to the **client** 31b. In this way, the
client 31b can exclusively use the computers which have supplied
the tokens. The resource use token includes the data on the.　.　the
resource, the amount of usable resource, the stability of the resource
and the resource usable time limit, and the **client** 31b
distributes the processes to the plurality of computers on the basis of
these data under the control shown in.　.　.

DETD　When a plurality of **clients** (e.g., 31b and 32b) request the
use of computer resources, each agent establishes connection with each

of the **clients** 31b and 32b. Each agent first supplies a
resource use token only to one predetermined client (e.g.,
31b) so as to allow the **client** 31b the exclusive use of the
computer resource and after the end of the use of the computer resource
by the **client** 31b, each agent supplies a resource use token to
the next **client** (e.g., 32b) so as to allow the **client**
32b the exclusive use of the computer resource. In this way, it is
possible to efficiently allot a plurality of. . .

DETD   . . . executed, 30 a communication network such as a LAN (Local Area
Network), and 31 to 36 a plurality of computers (**host** A to
host F) connected in the network. In the respective computers 31
to 36, the reference numerals 31a to 36a represent local resource
managers (LMs); 31b and 32b represent **clients** (CLTs), each of
which requests computer usable for process distribution and executes
distribution of processes 11 by using the allotted. . . the data on
the operational situation such as the usage of each computer and
determines the usable computers when a **client** CLT requests
computer resources; and 31d to 36d, represent a resource use permitting
mechanism (agent) for supplying a resource use token to the
client CLT which is designated by the domain resource manager DM
so as to permit the exclusive use of the resource. . .

DETD   In order that the **client** 31b distribute the group 11 of
processes to remote computers and ask them for the execution of the
processes, it. . .

DETD   If the amounts of processing of the processes 11a to 11n are known, the
scheduler 13 in the **client** 31b allots the process having the
largest amount of processing to a computer (e.g., 33) which has the
smallest cumulative. . .

DETD   The computers which are usable for the distribution of processes by a
client are determined as follows.

DETD   . . . 4). When the DM 32c receives a request for computers which are
usable for the distribution of processes from the **client** 31b
through the local resource manager LM 31a (FIG. 5), the domain resource
manager DM 32c determines at least two. . . consideration. For
example, computers 33 to 36 are selected in order of capacity and
reliability as the usable computers. The **client** 31b
distributes the processes to the usable computers 33 to 36 in the
manner
explained in FIG. 3. For the. . .

DETD   In order that the **client** 31b can actually ask the usable
computers 33 to 36 to execute the processes, it is necessary to obtain
permission. . .

DETD   . . . DM 32c determines the usable computers 33 to 36, in answer to
the request for a computer resource from the **client** 31b, the
DM 32c instructs the agents 33d to 36d of the respective computers to
answer the request for the execution of the processes from the
client 31b through the respective local managers LMs (FIG. 6).
Under the instructions of the DM 32c, each of the agents 33d to 36d
establishes a connection with the **client** 31b which requests
the use of computer resources (FIG. 7), and supplies a resource use
token to the **client** 31b for the purpose of the exclusive
allotment of the computer resource to the **client** 31b. The
resource use token includes the situation data of the resource, the
amount of usable resource, the stability of the resource and the
resource usable time limit, and the **client** 31b distributes the
processes to the plurality of computers on the basis of these data in
the manner shown in. . .

DETD   When a plurality of **clients** (e.g., 31b and 32b) request the
use of computer resources, each of the agents 33d to 36d establishes a
connection with each of the **clients** 31b and 32b. Each agent
first supplies a resource use token only to one predetermined
client (e.g., 31b) so as to allow the **client** 31b the
exclusive use of the computer resource and after the end of the use of
the computer resource by the **client** 31b, each agent supplies a
resource use token to the next **client** (e.g., 32b) so as to

DETD   allow the **client** 32b the exclusive use of the computer
resource.

DETD   . . . process allotting device (scheduler) for allotting a plurality
of processes to a plurality of computers, which is included in the
client 31b shown in FIG. 3; and 30 a group of computers. In the
group 11 of processes, the reference numerals. . .

DETD   . . . 9, the reference numeral 10 represents a network such as a
LAN,
and 31 to 35 computers (referred to as "**host** 1 to **host**
5" hereinafter) which are connected in the network and are operated on
UNIX. The CPU speed of each of the. . . of each of the hosts 4 and 5
is 200% (normalized as "2"). A scheduler 13 is mounted on one
host (e.g., **host** 4) among these hosts. It is assumed
that the computers 31 to 35 are already permitted to be used for. . .

DETD   In FIG. 10, the reference numerals 31 to 35 represent computers (
host 1 to **host** 5) 13 a scheduler 21 a procedure file
in which the compiling procedure for a program is written; 22 an. . .
per unit time of the processes which have been executed as the
execution
record data; 23 computer information (distribution processing
host information) including the CPU speed V.sub.cpu and the load
.eta. which are input from a **host** to the scheduler 13; and 24
process information including the names and the sizes of the files to
be
processed. The scheduler 13 allots the processes to the **host** 1
to **host** 5 in accordance with the compiling command with
reference to the procedure file 21, the execution record data file 22
and the distribution processing **host** information 23, and
commands the hosts to start compiling processings in parallel with each
other.

DETD   . . . process table for storing the data on the procedure for each
process and the amount of processing thereof; 13d a **host**
information controller for controlling the distribution processing
host information (CPU speed, CPU usage, etc.) 23 supplied from
each of the hosts 1 to 5; and 13e a distribution processing **host**
table (which corresponds to the process allotting computer table 13e in
FIG. 8) for storing the **host** information such as the CPU speed
(processing speeds) V.sub.cpu and the current CPU load n (usage) of
each
of the hosts 1 to 5, the **host** information being updated by the
host information controller 13d. The reference numerals 13f
represents a process allotting rule table, and 13j a later-described
resource requesting portion. . .

DETD   . . . of the data supplied from each of the tables 13c and 13e in
accordance with a predetermined algorithm; 13h a **host**.process
mapping table (which corresponds to the computer.process table 13h in
FIG. 8) for storing the correspondence of the computers to. . .

DETD   Step 4: In parallel with the steps 1 to 3, the **host**
information controller 13d periodically updates the contents of the
distribution processing **host** table 13e. The contents of the
current distribution processing **host** table 13e are shown in
FIG. 16. The distribution processing **host** table 13e is
composed of a **host** number column 13e-1, a **host** name
column 13e-2, a user column 13e-3, a CPU usage column 13e-4, a CPU load
column 13e-5 and a CPU speed column 13e-6. In FIG. 16, the CPU usage of
the **host** 4 is 30%, and the CPU usages of the other hosts are
0%.

DETD   . . . 13g allots the processes to the hosts by using the data of the
process table 13c and the distribution processing **host** table
13e. In the pipeline processing of the command (10), the processes are
separated at each stage before distribution.

DETD   The process allotting portion 13g obtains the **host** having the
smallest cumulative amount of processing with reference to a cumulative
processing amount table FIGS. 18(a)-(d), and the process (Seq 2) having
the largest amount of processing (the process Seq 2) is allotted to
this

host. Since the cumulative amount of processing of each
host at the init█ time is 0, the process Seq 2 █ allotted not
on the basis of the amount of processing but to the host
having the highest CPU speed and the smallest CPU load. In other words,
the effective CPU speed of each host is obtained from the
formula (b), and the process Seq 2 is allotted to the host
having the highest effective CPU speed. In this case, since the
effective CPU speeds of the hosts 1 to 5 are "1", "1", "1", "1.4" and
"2", respectively, the process Seq 2 is allotted to the host 5
(step 5b).

DETD Thereafter, the cumulative amount of processing of the host 5
is updated. The value 100 KB obtained by dividing the file size 200 KB
by the effective CPU speed. . .

DETD . . . in the negative, the process (Seq 4) having the second largest
amount of processing is similarly allotted to a predetermined
host. That is, the process Seq 4 is allotted to the host
4 having the highest effective CPU speed of the hosts 1 to 4, and the
cumulative amount of processing of the host 4 is updated (FIG.
18 (c)).

DETD Finally, the process Seq 6 is allotted to the host having the
smallest amount of processing. If two or more hosts have the smallest
amount of processing, the host having the highest effective
CPU speed is selected. In this case, although the hosts 1, 3 and 5 have
the smallest amount of processing, since the effective CPU speed of the
host 5 is the highest, the process Seq 6 is allotted to the
host 5, thereby ending the allotment processing.

DETD Step 6: If the allotment processing is finished at step 5, the
host.process mapping table 13h which shows the correspondence of
the hosts to the processes is created as shown in FIG. 19.

DETD Step 7: When the creation of the host.process mapping table
13h is finished, the processing starting and execution monitoring
portion 13i instructs the corresponding hosts to execute the. . . of
the processes Seq 1 to Seq 5 are finished, the processing starting and
execution monitoring portion 13i instructs the host 5 to
execute the process Seq 6.

DETD . . . actual processing. The time elapsed from the time when the
processing starting and execution monitoring portion 13i instructed to
the host to start processing to the time when the host
reports the end of the processing is monitored as the processing time.
The processing starting and execution monitoring portion 13i. . .
seconds, and the execution of the process Seq 4 has taken 9 seconds,
since the effective CPU speed of the host 3 which executes the
process Seq 1 is 1, 10 seconds (T: 10) is the execution record of the
process Seq 1. Since the effective CPU speed of the host 5
which executes the process Seq 2 is 2, 22 (=11.times.2) seconds is the
execution record of the process Seq 2. Since the effective CPU speed of
the host 4 which executes the process Seq 4 is 1.4, 12.6
(=1.4.times.9) seconds is the execution record of the process Seq. .

DETD . . . (FIG. 3). The reference numeral 41 represents a resource
information fetching portion for periodically fetching the situation
data of a host, namely, the usage of a resource (CPU, memory,
disk). The situation of a host will be represented by the CPU
usage n in the following explanation. The reference numeral 42
represents a load situation. . .

DETD The probability Pd of a breakdown of the host is calculated in
accordance with the statistical information. For example, the number of
times a host broke down during a predetermined measuring time
is obtained and the number of times is divided by the number of. . .

DETD . . . manager DM under the instruction of the control unit 45. The
data to be transmitted are the name of the host, the usage
.eta., the stability Sa of the host, the probability Pd of a
breakdown of the host, the remaining service time Ts, the
short-term and long-term prediction data, the data valid time Te

(actually 1 second is. . .

DETD . . . contr●●er for transmitting and receiv●● a message to and from

the domain resource manager DM, an agent AGT and a **client** CLT, and 49 a packet driven unit for processing a message (packet). When the packet driven unit 49 receives a. . . and supplies it to the domain resource manager (steps 49c and 49c'). If the message is a request to an

client, the packet driven unit 49 assembles a message packet and supplies it to the **client** (steps 49d and 49d').

DETD The control unit 45 then calculates the probability of a breakdown of the **host** and the remaining service time of the **host**,

etc. (step 45e). Thereafter, the control unit 45 judges whether or not the situation data transmitting time T.sub.0 has come. . . answer is in the negative, the control unit 45 judges whether or not the probability of a breakdown of the **host** is not less than 10% (step 45g). If the probability is less than 10%, the process returns to the start. . .

DETD . . . other hand, if the situation data transmitting time To has come, or if the probability of a breakdown of a **host** is not less than 10%, the control unit 45 transmits the situation data (usage),

the stability, the data valid time. . .

DETD . . . if the CPU usage exceeds a preset value, e.g., 80%, and it is impossible to execute a process under a **remote control** of another computer, the situation data is not transmitted. In this case, the domain resource manager DM directly inquires of. . .

DETD While a computer is executing a process under a **remote control**, in answer to the request from a **client**, the situation data is not transmitted, and after the end of the processing, the situation data is transmitted. If the situation data is transmitted during the execution of a process under **remote control**, the usage obtained by subtracting the usage for the remote processing from the total usage is set as the true. . .

DETD . . . collects and controls the situation data of each computer and determines usable computers in answer to a request from a **client**.

DETD The reference numeral 51 represents a **host** situation data storage unit for storing the **host** situation data supplied from the local resource manager LM of each computer, 52 a **host** situation data controller for controlling the contents of the **host** situation data storage unit 51, and 53 a resource use information storage unit for receiving the data on the resource use situation of a **client** from an agent AGT (FIG. 3) and storing the data. The resource use information includes the name of the **client host**, the name of the resource used, the amount of resource used, and the time during which the resource is used.. .

represents a resource use information controller and 55 a resource allotment scheduler for determining computers which are usable by a **client** with the **host** situation and the resource use information of the **client** taken into consideration in answer to a request from the **client**. The reference numeral 56 represents a communication controller for receiving and supplying a message to and from the local resource. . .

DETD The message to be received includes a **host** situation message MS1 (FIG. 24) supplied from a local resource manager LM, a resource use information message MS2 supplied from an agent AGT, and a resource use requesting message MS3 supplied from a **client** CLT. The resource use requesting message MS3 includes the address, the request for allotment, the type of resource (e.g., CPU), the necessary amount (number of CPUs), the **host** name, and the name of the connection port, as shown in FIG. 28(a).

DETD . . . LM through the communication controller 56, the packet driven unit 57 analyzes the message. If the message received is the

host situation message MS1, the packet driven unit 57 transmits
the massage to the host situation data controll 52, and the
host situation data controller 52 stores the host
situation data in the host situation storage unit 51 (step
50a). If the message received is the resource use information message
MS2 supplied from an. . . the resource use information controller
54,
and the resource use information controller 54 registers the resource
use information of each client in the resource use information
storage unit 53 (step 50b). If the message received is the resource use
requesting message MS3 supplied from a client CLT, the packet
driven unit 57 transmits the message to the resource allotment
scheduler
55. The resource allotment scheduler 55 determines usable computers
with
reference to the host situation and the resource use
information of the client, and supplies a connection
requesting message MS4 to the agents AGT of the computers (step 50c.
The
connection requesting message MS4 includes the address, the request for
AGT connection, the type of resource, the host name, and the
number of the connection port, as shown in FIG. 28(b).

DETD   Processing of Host Situation Data Controller
DETD   FIG. 30 shows the processing flow of a host situation data
controller. In FIG. 30, the situation of only one host will be
explained.
DETD   When the host situation data controller 52 receives the
host situation message MS1 from the packet driven unit 57, the
host situation data controller 52 stores the host
situation data (FIG. 24) in correspondence with the host name
in the host situation data storage unit 51 (steps 52a, 52b).
The host situation data controller 52 then decreases the data
valid time Te included in the host situation data at a
predetermined interval of time (step 52c) and judges whether or not the
data valid time Te reaches 0 (step 52d). If Te is not 0, the process
returns to step 52a, and if the host situation message is not
received, the data valid time Te is decreased.
DETD   If a new host situation message MS1 is received before Te
becomes 0, the current host situation data is replaced by the
newly received host situation data, and the above processing
is repeated. If the computer normally works, a new host
situation data is supplied from the local resource manager LM.
DETD   . . . considered to be out of order and the computer is excepted
from
the objects of distribution. That is, when a client requests
the use of a computer, this computer is not allotted (step 52e).
DETD   . . . usage (step 55c), the usable computer is determined with the
stability, CPU speed, the probability of the breakdown of a host
, the predicted value of the future usage and the remaining service
time
taken into consideration (step 55e). For example, an. . . determined
so that the higher the stability and the CPU speed, the smaller the
probability of the breakdown of a host and the predicted value
of the future usage and the longer the remaining service time, the
larger the evaluation function. . .
DETD   . . . the resource allotment scheduler 55 judges whether or not the
same number of computers as the number required by the client
have been determined (step 55f). If the answer is "NO" the process
returns to the step 55b and a similar. . .
DETD   When a plurality of clients simultaneously request the use of
computers, the resource allotment scheduler 55 determines the computer
allotment schedule on the basis of the resource use information of each
client, and allots the computer resources to the clients
.
DETD   (e) Control of Resource Use Requesting Messages from Clients

DETD   Structure of **Client**
DETD   FIG. 32 shows ● structure of a **client**. The s● numerals are
        provided for t●● elements which are the same as ●●ose in FIG. 11. In
        FIG. 32,. . . 24; 13c, a process table for storing the data on each
        process and the amount of processing thereof; 13e, a **host**
        information storage unit for storing the **host** information
        (usage, stability, hardware information, etc.) included in the resource
        use token which is supplied from a usable computer; 13g,. . . the
        resource requesting message MS3 (FIG. 28(a) in accordance with the
        processing command; and 13m, a communication controller having a
   connection breaking detecting mechanism 13n for detecting a
        breaking of the **connection established** between the
        communication controller and agents. The reference numeral 13p
        represents a resource use information storage unit for storing the name
        of the **host** which is utilized for the distribution of the
        processes, the port number, the name of the resource used, the amount.
           . .
DETD   Operation of **Client**
DETD   . . . of the agents AGT of the computers which received the
        connection requesting message MS4 (1) establishes a connection with the
    client CLT, (2) and then supplies a computer resource use token
        which allows the exclusive use of the computer resource to the
    client. The computer resource use token includes, for example,
        the token ID, situation of the resource, the amount of usable   ＼
resource,.   .
           . .
DETD   When the packet driven unit 13a receives a resource use token from an
        agent AGT, it stores the **host** information included in the
        token in the **host** information storage unit 13e and updates the
        resource use information stored therein in correspondence with the
agent
        AGT. The packet. . .
DETD   When the packet driven unit 13a receives a resource use end message
from
        an agent AGT, it deletes the **host** information in the
    host information storage unit 13e which corresponds to the agent
        AGT.
DETD   . . . of the connection as the breakdown of the computer or
rejection
        of forced use of the computer, and deletes the **host**
        information in the **host** information storage unit 13e which
        corresponds to the agent AGT with which the connection has been cut.
        Thereafter, the resource. . .
DETD   In order that a **client** CLT can actually ask the usable
        computers which are determined by the domain resource manager DM to
        execute the processes,. . .
DETD   . . . the resource, etc., and 62 represents a resource use
        information storage unit for storing the resource use information of
        each **client**. The resource use information of each   ＼
    client includes the name of the **host** of a
    client, the number of the connection port, the user, the
        resource used, the amount of resource used, the time during which. .

DETD   The reference numeral 63 represents a resource situation controller for
        registering the resource situation (**host** situation) of the
    host of the agent in the resource use situation storage unit 61,
        64 represents a resource scheduler for executing the control of the
        allotment of a resource, the **establishment** of a
    connection and the transmission of a resource use token (FIG.
        34) with respect to a plurality of **clients**; 65 represents a
        resource use token storage unit; 66 represents a communication
        controller; 67 represents a resource use controller for checking the
        token and controlling the execution of the processing command supplied
        from a **client**; 68 represents a packet driven unit; and 69
        represents a **connection** controller for controlling the

establishment/breaking of a **connection** with a
client CLT.

DETD   . . . domain resource manager DM determines usable computers in
answer to the request for the use of a resource from a **client**,
as described above, and transmits the **connection** requesting
message MS4 (FIG. 28(b)) to the agents of the usable computers. When
the

packet driven unit 68 of each. . . through the communication
controller 66, the packet driven unit 68 transmits the message to the
resource scheduler 64 and the **connection** controller 69. The
connection controller 69 **establishes** a
connection with the **client** CLT by using the
host name and the port number which are designated in the
connection requesting message MS4 in accordance with the
TCP/IP protocol in the UNIX.

DETD   The resource scheduler 64 then determines the **client** to which
the resource is allotted on the basis of the resource situation (the
situation of its own computer) and the resource use information of each
client, creates a resource use token and supplies the token to
the **client**. At this time, the resource scheduler 64 stores the
contents of the resource use token in the resource use token. . .
token ID. The resource scheduler 64 also updates the contents of the
resource use information storage unit 62 for the **client**.

DETD   When a plurality of **clients** require a resource, the resource
scheduler 64 supplies a resource use token so that the resource is
allotted to the **clients** in an ascending order of amount of
resource used and the time during which the resource is used on the
basis of the resource use situation of the **client**, so that the
resource is allotted to the **clients** in turn in a round robin,
or so that the **clients** are alternately permitted to use the
resource. Therefore, even if a plurality of **clients**
simultaneously require a resource, the agent AGT supplies a resource
use

token to one **client** while keeping the other **clients**
waiting.

DETD   When a **client** receives the resource use token, the processes
are distributed to the usable computers and a resource use message
(processing asking. . .

DETD   . . . and the time at which the resource use message MS5 is received
is large, the resource scheduler 64 informs the **client** CLT
that the resource use message MS5 is cancelled, and supplies a new
resource use token. Alternatively, the resource scheduler 64 transmits
a

message to the **client** CLT stating that the processing will be
delayed, thereby delaying the use of the resource until the resource
becomes available.

DETD   . . . use controller 67 extracts and executes a sequence of
processing commands, and supplies the result of the execution to the
client. In this case, the connection controller 69 establishes a
connection with the **client** CLT so as to output the result of
the execution of the sequence of processing commands and the like.

DETD   . . . 67 nullifies the supplied resource use token and instructs the
resource scheduler 64 to supply a token to the next **client**.
When the resource usable time limit designated by the token has
elapsed,

when the **client** does not use the computer for a predetermined
time, or when the resource use controller 67 has received a token
return

message from the **client**, the resource use controller 67 cuts
the connection and instructs the resource scheduler 64 to supply a
token

to the next **client**.

DETD   When the packet driven unit 68 is requested to supply the resource use
information of a **client** by the domain resource manager DM, the
packet driven unit 68 transmits the request to the resource scheduler

64. The resource scheduler 64 then transmits a message indicating the resource use in●mation of the **client** to the d●n resource manager DM.

DETD   In the above embodiments, the domain resource manager DM determines usable computers in answer to the request from a **client** CLT. Alternatively, the domain resource manager DM may have the function of a **client** so as to collect and control the situation data of each computer and distribute resources to the computers.

CLM   What is claimed is:

8. A computer resource distributing method for allotting a plurality of computers connected in a network to a **client** which requires selected computers of said plurality of computers to perform processes under control of a server, said method comprising. . . data from each respective computer of said plurality of computers, to the server which allots the selected computers to the **client** to perform processes; and allotting, by said server, the selected computers of said plurality of computers to said **client** on the basis of said first and second data.

. . . second data are received by a respective computer; and excepting the respective computer from the objects of allotment to the **client** if the valid time of the respective computer is a selected value.

. . . said server together with said first and second data; and allotting some computers of said plurality of computers to said **client**, by said server, based on said respective first data, said respective second data and said respective processing speed.

. . . steps of: supplying said first and second data, which have been prepared, of the computers which are allotted to said **client**, from said plurality of computers to the **client**; and distributing said processes to said allotted computers with reference to said first and second data.,

15. A computer resource distributing method for allotting a plurality of computers connected in a network to a **client** which requires some of said plurality of computers for performing processes under control of a server, said method comprises the. . . each agent supplying a message for permitting exclusive use of a respective computer of the plurality of computers, to the **client** and each local resource manager monitoring a respective utilization rate of said respective computer; monitoring the respective utilization rate of. . . manager to said server; requesting, to the server, use of the plurality of computers for performing said processes by the **client**; determining, using said server, which computers of the plurality of computers are to be allotted to the **client** based on the respective utilization rate of each computer of said plurality of computers when said **client** requests use of any of said plurality of computers; establishing a connection with said **client**, by each of said agents, of said allotted computers; supplying said message from each said agent of said allotted computers to said **client**, so as to permit exclusive use of the computer said **client** requests use of; and distributing, by said **client**, said processes to said allotted computers.

. . . resource distributing method according to claim 15, further comprising the steps of: determining the computers to be allotted for each **client** when a plurality of **clients** request the use of any of said plurality of computers; establishing a connection

with each respective **client** of the **clients** by each
of said agents ●said computers allotted to said●lient;
supplying said message to one predetermined **client** from said
agents of said allotted computers so as to permit exclusive use of said
computer; and supplying said message from each of said agents to
another
     client to which said each of said agent is allotted so as to
     permit exclusive use of said computer when said predetermined
    client completes use of the requested computer of said plurality
     of computers.

     17. A computer resource distributing method according to claim 15,
     wherein said distributing step by the **client** include:
     arranging said processes in order of respective estimated amounts of
     processing; monitoring respective cumulative amounts of processing of
     each. . .
.   . . of: storing the utilization rate added to said message in a memory
of
     said agents; sending a message, from said **client** to said
     agents, requesting processing of at least one of said distributed
     processes; comparing a respective current utilization rate of. . .
.   . . of: storing the utilization rate added to said message in a memory
of
     said agents; sending a message, from said **client** to said
     agents, requesting processing of at least one of said distributed
     processes; comparing a respective current utilization rate of. . .
     agents received said message requesting processing with said stored
     utilization rate; and transmitting a message from said agent to said
    client indicating said processing will be delayed until the
     respective computer becomes available when there is a specified change
     in said. . .
     21. A computer resource distributing method according to claim 19,
     further comprising the steps of: notifying said **client** that
     said agent will not perform the distributed processes, when a specified
     change in said utilization rate of the respective. . . a new message
     including the respective current utilization rate of the respective
     computer as a new utilization rate to said **client**, from said
     agent, to permit exclusive use of said respective computer; and
     distributing said processes to said allotted computers based on the new
     utilization rate, by said **client**.

     22. A computer resource distributing method according to claim 15,
     further comprising the steps of: providing, in said **client**, a
     mechanism for detecting a breaking of said connection to said agent;
     detecting a breaking of the connection to a. . . said allotted
     computers except to the computer corresponding to said agent which
     detects the breaking of the connection with said **client**.

.   . . system for distributing a multiplicity of processes to a plurality
of
     computers connected in a network, said system comprising: a
    client for requesting the use of a plurality of computers to   ╯
     perform a multiplicity of processes; a server for allotting the
     computers to said **client** based on utilization rates, each of
     said plurality of computers having a respective utilization rate, when
     said **client** requests the use of the plurality of computers; a
     resource manager, provided in each of said plurality of computers,
     which. . . provided in each of the allotted computers, which
     transmits a message permitting exclusive use of the respective
computer,
     to said **client**, said agent of a computer being allotted to
     said **client** supplying said message to said **client**
     and, thereafter, said **client** distributing said processes to
     said allotted computers.

25. A computer resource distributing system according to claim 24, wherein: said resource manager transmits data indicative of a reliability. . . . given period of time is small and decreasing when said variation is large; and said server allots computers to the **client** based on said utilization rate and said data.

26. A computer resource distributing system according to claim 24, wherein said **client**: arranges said processes in order of amount of processing; monitors each respective cumulative amount of processing corresponding to each of. . .

NCL   NCLM: **709/104.000**
           NCLS: **709/226.000**

```
        FILE 'USPATFULL' ENTERED AT 15:12:00 ON 20 JUL 2000
L1        6696 S  (713/?)/NCL
L2        8531 S  (709/?)/NCL
L3         829 S  "TCP/IP" PROTOCOL
L4       36036 S  REMOT? CONTROL?
L5           2 S  ADVERTIS? PUBLISHER
L6           3 S  AD PUBLISHER#
L7           5 S  L5 OR L6
L8       14582 S  L1 OR L2
L9           2 S  L3 (P) L4
L10         36 S  L3 AND L4 AND L8
L11         25 S  L10 AND HOST
L12         22 S  L11 AND CLIENT#
L13         14 S  L12 AND ADVERTIS?
L14         14 S  L13 AND (AVAILABILITY OR CAPACITY)
L15          0 S  L14 AND JAVA
L16          0 S  L14 AND HTML
L17        131 S  ESTABLISH? (P)CONNECT? (P) CLIENT# (P) HOST
L18        195 S  URL ADDRESS?
L19          1 S  L17 AND L18 AND JAVA AND HTML
L20          3 S  L10 AND JAVA
L21          6 S  L10 AND HTML
L22          7 S  L20 OR L21
L23          2 S  L22 AND HOST
L24          2 S  L23 AND CLIENT#
L25         22 S  L10 AND HOST AND CLIENT#
L26          2 S  L25 AND URL
L27          1 S  L25 AND L17
L28      53742 S  AD OR ADVERTIS?
L29      17055 S  AD PUBLISHER# OR ADVERTIS?
L30         14 S  L25 AND L29
L31          0 S  L30 AND JAVA
L32          0 S  L30 AND HTML
L33          2 S  L25 AND HTML
L34          1 S  L25 AND JAVA
L35          2 S  L33 OR L34
L36          6 S  L10 AND HTML
L37          3 S  L10 AND JAVA
L38          7 S  L36 OR L37
L39          5 S  L38 NOT L35

=> D 1-5 FP
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L39  ANSWER 1 OF 5  USPATFULL
United States Patent            Patent Number:  6061738
                                Date of Patent: 9 May 2000
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Method and system for accessing information on a network using message
aliasing
functions having shadow callback functions

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              Pan, Rong, Niiza, Japan
Assignee:     D&I Systems, Inc., Tokyo, Japan (non-U.S. corporation)
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Related U.S. Application Data

Reference Cited

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7 Claim(s), 27 Drawing Figure(s), 25 Drawing Page(s)

ABSTRACT

The present invention provides methods and systems for accessing a network URL through a pre-assigned simplified network address, correlating to the URL, and for displaying the home page having the URL as its address. These methods and systems provide easier URL and home page access because persons wanting to access the home page need only input the simplified network address, thereby avoiding the need to know and input the URL character string. The simplified network addresses of the present invention include numbers. Methods are provided for selecting numbers for assignment to URLs. The URL and home page access and display methods of the present invention include: assigning a simplified network address such as a number to a URL, storing the URL and number conversion in a network accessible storage system, inputting the assigned number in a network accessible computer, communicating the inputted number to the storage system, converting the number to the URL, retrieving the

home page corresponding to the URL and displaying the home page on the computer. Additionally, the invention provides methods ● use in message passing operating systems wherein system level messages ● specific objects are
intercepted, creating an alias message.

L39 ANSWER 2 OF 5 USPATFULL
United States Patent   Patent Number: 6044403
                                              Date of Patent: 28 Mar 2000

Network server platform for internet, **JAVA** server and video application server

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Appl. No.:   97-1354
Filed: 31 Dec 1997

Int. Cl. G06F013-00
Issue U.S. Cl. 709/225.000; 709/217.000; 709/223.000; 709/238.000
Current U.S. Cl. **709/225.000; 709/217.000;**
                       709/223.000; 709/238.000
Field of Search 709/201; 709/202; 709/203; 709/217; 709/219; 709/223;
                       709/224; 709/225; 709/227; 709/229; 709/238; 709/300;
                       709/250

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Transmission Through Wire, to Robert R. Miller, II, Jesse E. Russell and
Richard R. Shively, 15 pages.

Art Unit - 278
Primary Examiner - Vu, Viet D.

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14 Claim(s), 21 Drawing Figure(s), 21 Drawing Page(s)

ABSTRACT
A new architecture capable of utilizing the existing twisted pair interface
between the customer services equipment and the local office is used to
provide
a vast array of new services to customers. Using an intelligent services
director (ISD) at the customer services equipment and a facilities management
platform (FMP) at the local office, new services such as simultaneous,
multiple
calls (voice analog or digital), facsimile, Internet traffic and other data
can
be transmitted over the existing single twisted pair using xDSL transmission
schemes. New services such as the implementation of Internet connectivity,
videophone, utility metering, broadcasting, multicasting, bill viewing,
information pushing in response to a user profile, directory look-up and other
services can be implemented via a network server platform via this
architecture. A network server platform for hosting a plurality of services
comprises, for example, a memory for storing a user profile, the user profile
containing interests of a user, and for storing information related to their
interests and a controller for controlling the collection of information from
information servers and for pushing the collected information to the user in
accordance with their defined priority.

L39 ANSWER 3 OF 5 USPATFULL
United States Patent   Patent Number: 6032162
                                   Date of Patent: 29 Feb 2000

System for processing and storing internet bookmark address links

Inventor(s): Burke, Alexander James, 3 Glenside Ter., Upper Montclair, NJ,
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Appl. No.:   98-4409
Filed: 8 Jan 1998

Int. Cl. G06F013-00
Issue U.S. Cl. 707/501.000; 709/206.000

Current U.S. Cl. 707/501.000; **709/206.000**
Field of Search .... 707/501; 707/513; 709/203; 709/2● 709/206; 345/335;
345/348-351; 345/356; 345/357

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Patent Number	Date	Class	Inventor
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Art Unit - 276
Primary Examiner - Feild, Joseph H.
Assistant Examiner -   Bourque, R

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28 Claim(s), 5 Drawing Figure(s), 5 Drawing Page(s)

ABSTRACT

A system supports upl⬤ng, downloading, collating and⬤orage of bookmark addresses (Universal Resource Locator codes--URLs) using a remote Internet site. A method for accessing Internet data using a remotely stored Internet address or bookmark (URL address code) at a User site involves initiating Internet communication with a remote Internet site and receiving User identification information for obtaining access to a stored bookmark. At least one bookmark stored at the remote Internet site is selected and transfer of data is initiated from an Internet data source at the selected bookmark address. The remote Internet site receives User identification information and bookmarks via Internet communication, stores the bookmarks in a file identifiable with the User Identification information and downloads the stored bookmarks in response to a request via Internet communication.

L39 ANSWER 4 OF 5 USPATFULL
United States Patent

Patent Number: 5982445
Date of Patent: 9 Nov 1999

Hypertext markup language protocol for television display and control

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Assignee: General Instrument Corporation, Horsham, PA, United States (U.S. corporation)
Appl. No.:   96-734681
Filed: 21 Oct 1996

Int. Cl. H04N005-50
Issue U.S. Cl. 348/461.000; 348/460.000; 348/007.000; 395/200.480
Current U.S. Cl. 348/461.000; 348/007.000; 348/460.000;
                709/218.000
Field of Search 345/327; 348/6; 348/7; 348/10; 348/12; 348/13; 348/906;
                       348/552-553; 348/563; 348/460; 348/554; 348/564;
                       348/461; 348/465; 455/5.1; 455/6.1; 455/6.2; 455/6.3;
                       455/4.2

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Art Unit - 274
Primary Examiner - Peng, John K.
Assistant Examiner -   Chu, Dinh Cao Peter
Attorney, Agent or Firm - Lipsitz, Barry R.; Hoppin, Ralph F.

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30 Claim(s), 5 Drawing Figure(s), 5 Drawing Page(s)

ABSTRACT
Textual and graphical displays are provided on a television screen using a
hypertext markup language (**HTML**). On-screen display devices allow a
user to invoke hyperlinks to different pages of **HTML**-coded data in
addition to functions calls for controlling television and non-television
appliance functions. A method provides **HTML**-coded display data which
is processed to provide a signal suitable for reproduction on a television.
The
display data may provide information on a featured movie or other presentation
of an associated video programming service signal such as a network television
broadcast. Function calls allow the control of various television functions
and
programming options, such as the purchase of pay-per-view programming, or
television display options such as aspect ratio, channel, brightness,
picture-in-picture, or split-screen. Non-television appliances which may be
controlled with function calls include audio equipment which is associated
with
the programming service (e.g., surround sound, filtering) in addition to, for
instance, a home heating and air conditioning system or other household
appliances. The invention allows a designer to adapt the vast **HTML**
resources of the Internet for use in the television environment for
entertainment, educational or informational purposes.

L39   ANSWER 5 OF 5   USPATFULL
United States Patent   Patent Number: 5909551
                                          Date of Patent: 1 Jun 1999

Interactive recording/reproducing medium and reproducing system

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Patent Number	Date	Class	Inventor
US 5233438	Aug 1993	358/341.000	Funahashi
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Nikkei Electronics 1993, No. 594, pp. 169-175.

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29 Claim(s), 32 Drawing Figure(s), 24 Drawing Page(s)

ABSTRACT
An interactive recording/reproducing medium including: image data; image
reproduction control data which defines an operation instruction received from
operation input apparatus and a reproduction procedure for the image data in
correlation with each other, the operation input apparatus performing a
reproducing operation for the image data in an interactive manner; image
related data related to the contents of the image data; and relation defining
information which defines the relation between the image related data and the
image data. More particularly, an interactive recording/reproducing system
which is interactively responsive to operations made by a user, which defines
information such as text data (e.g., ASCII text) in association with an image
and reproduces the text data simultaneously with reproduction of the image. An
optical disk medium comprises a Video-CD recording area for recording image
data (e.g. dynamic images, static images, voice) which conform to a basic
Video-CD standard, a PC data recording area for recording text data associated
with the image data, and a reproduction application recording area for
recording a program to effect reproduction using a PC (personal computer). A
Video-CD reproducing system and a PC can be alternatively used to perform
reproduction using a content of the optical disk medium.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

Patent Number: 5568612
Date of Patent: 22 Oct 1996

Method and apparatus for **advertising** services of two network servers
from a single network node

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Assignee: Canon Kabushiki Kaisha, Tokyo, Japan (non-U.S. corporation)
Appl. No.:   92-978499
Filed: 18 Nov 1992

Int. Cl. H04L012-18
Issue U.S. Cl. 395/200.010; 395/650.000; 395/800.000; 364/DIG.001;
                       364/DIG.002
Current U.S. Cl. **709/203.000; 709/219.000**
Field of Search 395/200; 395/650; 395/800; 395/200.01

Reference Cited

PATENT DOCUMENTS

Patent Number	Date	Class	Inventor
US 4742483	May 1988	364/900.000	Morrell
US 4800488	Jan 1989	364/200.000	Agarwal et al.
US 4835673	May 1989	395/200.000	Rushby et al.
US 4866664	Sep 1989	364/900.000	Burkhardt, Jr. et al.
US 4974199	Nov 1990	364/900.000	Verbanets, Jr. et al.
US 5007013	Apr 1991	364/900.000	Elms
US 5018079	May 1991	364/519.000	Shukunami, et al.
US 5075875	Dec 1991	395/117.000	Love et al.
US 5151989	Sep 1992	395/600.000	Johnson et al.
US 5163131	Nov 1992	395/200.000	Row et al.
US 5191650	Mar 1993	395/200.000	Kramer et al.
US 5220674	Jun 1993	395/800.000	Morgan et al.
US 5303336	Apr 1994	395/114.000	Kageyama et al.
US 5341477	Aug 1994	395/200.000	Pitkin et al.
US 5379296	Jan 1995	370/060.000	Johnson et al.
US 5410535	Apr 1995	370/016.000	Yang et al.
US 5450571	Sep 1995	395/500.000	Rosekrans et al.
EP 384339	Aug 1990		

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IBM Technical Disclosure Bulletin, Aug. 1990, vol. 33, pp. 407-408.

Art Unit - 235
Primary Examiner - Treat, William M.
Assistant Examiner - Maung, Zarni
Attorney, Agent or Firm - Fitzpatrick, Cella, Harper & Scinto

18 Claim(s), 31 Drawi⬤Figure(s), 31 Drawing Page(s) ⬤

ABSTRACT

Method and apparatus for **advertising** two network servers from a
single network node in a LAN communication system which supports
advertising   only a single network server from any one node. A
surrogate
server is configured at the network node to listen for network broadcasts to a
proprietary socket and then interleavedly **advertises** that the
services of the first and second network servers (the "**client**"
servers) are available from the node. When a network broadcast request
addressed to the proprietary socket is received, the surrogate server responds
to the request if directed to one of its **clients**, thereby permitting
direct communication to be established with the designated one of the first or
second network servers, for example, over the communication socket which is
different from the proprietary socket.

United States Patent

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Date of Patent: 22 Oct 1996

Method and apparatus for **advertising** services of two network servers
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